

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-18 (canceled).

19. (New) A method employing a computer for predicting a deformation in a body, comprising the steps of:

defining, using the computer, a system within the body and surroundings within the body about the system;

specifying, using the computer, a sum of external forces (\mathbf{f}_{ext}) exerted on the system by the surroundings;

specifying, using the computer, a sum of system forces (\mathbf{m}_{syst}) exerted by the system on the surroundings;

specifying, using the computer, material properties of the system;

specifying, using the computer, boundary conditions acting at the interface between the system and the surroundings;

predicting, using the computer, the deformation of the body according to the formula:

$$\mathbf{f}_{\text{ext}} + \mathbf{m}_{\text{syst}} + \mathbf{m}_A + \mathbf{f}_{\text{s}(\text{ext})} + \mathbf{m}_{\text{s}(\text{syst})} = 0;$$

wherein: \mathbf{m}_A represents surface-bonding constraining forces, $\mathbf{f}_{\text{s}(\text{ext})}$ represents the shear component of \mathbf{f}_{ext} , and $\mathbf{m}_{\text{s}(\text{syst})}$ represents the shear component of \mathbf{m}_{syst} ; and

displaying, using the computer, the deformation of the body.

20. (New) The method of claim 19, further comprising specifying, using the computer, the geometry of the system without using a plurality of nodes defining a grid.

21. (New) The method of claim 19, wherein the material properties vary as a function of location within the body.

22. (New) The method of claim 19, wherein the step of predicting the deformation comprises computing, using the computer, a crack potential as a function of location within the body to identify regions within the body susceptible to deformation.

23. (New) The method of claim 19, wherein the step of predicting the deformation comprises computing, using the computer, radial elongations and/or radial contractions within the body to identify volumetric deformation.

24. (New) The method of claim 19, wherein the step of displaying the deformation of the body comprises displaying, using the computer, the deformation of the body in two dimensions.

25. (New) The method of claim 26, wherein the step of displaying in two-dimensions comprises displaying, using the computer, the deformation of the body using different colors, the different colors indicating relative magnitudes of the deformation of the body.